SDM220-Mbus

Single-Phase Two Module DIN Rail Meters

- Measures kWh, kVArh, kW, kVAr, kVA, PF, Hz, dmd, V, A, etc.
- Bi-directional measurement IMP & EXP
- Two pulse outputs
- MBUS
- Din rail mounting 35mm
- 100A direct connection
- Better than Class 1 / B accuracy

User Manual V1.8

Application

The energy-meters “with a white back-lighted LCD screen for prefect reading” are used to measure single-phase like residential, utility and industrial application. The unit measures and displays various important electrical parameters, and provide a communication port for remote reading and monitoring. Bi-directional energy measurement makes the unit a good choice for solar PV energy metering.

PART 1 Specification

General Specifications

Voltage AC (Un)	230V
Voltage range	176~276V AC
Basic current (Ib)	5A
Max. current (Imax)	100A
Mini. current (Imin)	0.25A
Starting current	0.4% of Ib
Power consumption	<2W/10VA
Frequency	50/60Hz(±10%)
AC voltage withstand	4KV for 1 minute
Impulse voltage withstand	6KV-1.2uS waveform
Overcurrent withstand	30 Imax for 0.01s
Pulse output rate	
-Pulse Output 1	1000/100/10/1 imp/Exp/kWh/kVArh (configurable)
-Pulse Output 2	1000imp/kWh (default) for import kWh
Display	LCD with white backlit
Max. Reading	99999.99kWh

Accuracy

Voltage	0.5% of range maximum
Current	0.5% of nominal
Frequency	0.2% of mid-frequency
Power factor	1% of Unity
Active power	1% of range maximum
Reactive power	1% of range maximum
Apparent power	1% of range maximum
Active energy	Class 1 IEC62053-21
	Class B EN50470-1/3
Reactive energy	Class 2 IEC62053-23

Environment

Operating temperature	-25℃ to +55℃
Storage and transportation temperature	-40℃ to +70℃
Reference temperature	23℃±2℃
Relative humidity	0 to 95%, non-condensing
Altitude	up to 2000m
Warm up time	3s
Installation category	CAT II
Mechanical Environment	M1
Electromagnetic environment	E2
Degree of pollution	2

Output

Pulse Output

The meter provides two pulse outputs. Both pulse outputs are passive type.

Pulse output 1 is configurable. The pulse output can be set to generate pulses to represent total / import/export kWh or kVArh.

The pulse constant can be set to generate 1 pulse per: 0.001(default) /0.01/0.1/1kWh/kVArh.

Pulse width: 200/100(default)/60ms

Pulse output 2 is non-configurable. It is fixed to import kWh. The constant is 1000imp/kWh.

MBUS

M-Bus (Meter Bus) is a hierarchical system that consist of a Master, several Slaves and a pair of connecting cables. All the devices are serially connected to the Bus, and all the serial communication process on the Bus are controlled by the major device.

The work status of Mbus are Data transmission status and idle work status, the data are bidirectional transported between the Master and Slave. Only one Master is allowded to connect to the Bus when the data transmission happens from Mater to Slave direction, and the Master need to provide power to the Bus. Household utility meters can realize the function of remote meter reading via expanded to a Meter Bus and gain the ability of Bus communication.

Eastron SDM220-Mbus single phase two wires meter supports MBUS remote communication function, its protocol standard is EN 13757-3-2004.

Baud rate : 300, 600, 1200, 2400(default), 4800, 9600bps

Parity : NONE(default)/EVEN/ODD

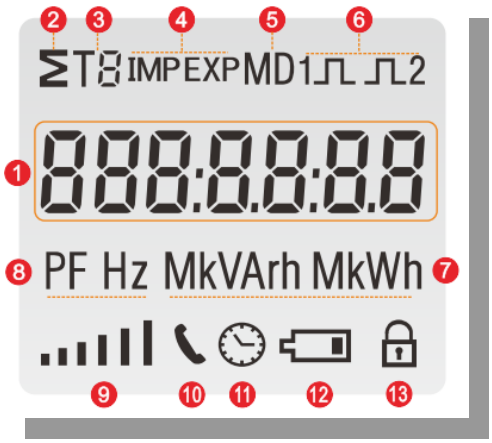
Stop bit : 1 or 2

Primary address : 001 to250

Secondary address : 00 00 00 01 to99 99 99 99

LCD display

Item	Descriptions
1	7 digits used to display measured values or RTC
2	Total value
3	Tariff information
4	Import information, Export information
5	Max. Demand for Power or Current
6	Pulse output 1 and Pulse output 2
7	Measurement units
8	PF = power factor Hz = frequency
9	Bar display of Power
10	Communication indicator
11	Time information
12	Low battery warning
13	Lock symbol

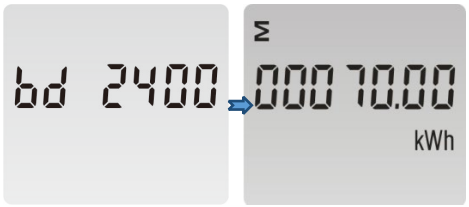


PART 2 Operation

Initialization Display

When it is powered on, the meter will initialize and do self-checking.

Full screen → software version → MBUS ID → Secondary address (high bit) → Secondary address (low bit)



Baud rate → total kWh

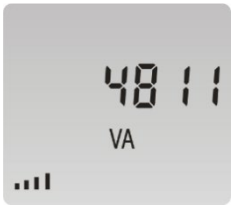
Scroll Display by Button

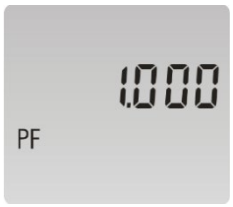
After initialization and self-checking program, the meter display the measured values. The default page is total kWh. If the user wants to check other information, he needs to press the scroll button on the front panel.

The display order by scroll button  :

Total kWh→ import kWh→export kWh→ total kVArh→ import kVArh→ export kVArh→ Max. power demand→ voltage→ current→W→ VAr→ VA→ power factor → frequency → pulse constant→ MBUS primary address→ MBUS secondary address→baud rate.

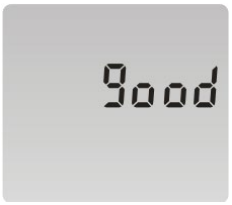
Page	Display	Descriptions
1		Total active energy Example:70.00kWh
2		Import active energy Example: 50.00kWh
3		Export active energy Example: 20.00kWh
4		Total reactive energy Example: 10.00kVArh
5		Import reactive energy Example: 5.00kVArh

6		Export reactive energy Example: 5.00kVArh
7		Total max. power demand Example: 6930W
8		Voltage Example: 229.8V
9		Current Example: 30.156A
10		Active power Example: 4700W
11		Reactive power Example: 1030VAr
12		Apparent power Example: 4811VA

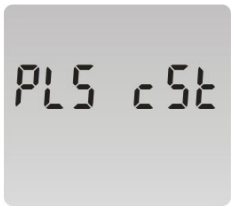
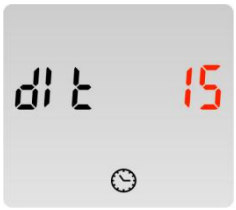
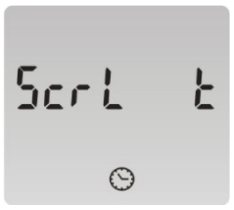
13		Power factor Example: 1.000
14		Frequency Example: 49.99Hz
15		Pulse constant Example: 1000
16		MBUS primary address Example: 001
17		MBUS Secondary address High bit of MBUS Secondary address (Default: same as SN）
18		Low bit of MBUS Secondary address (Default: same as SN） Example: if the Secondary address high bit is 0000,low bit is 0001,that means the integral Secondary address is 00 00 00 01
19		Baud rate Example: 2400

Set-up Mode

To get into Set-up Mode, the user need press the "Enter" button  for 3 second.

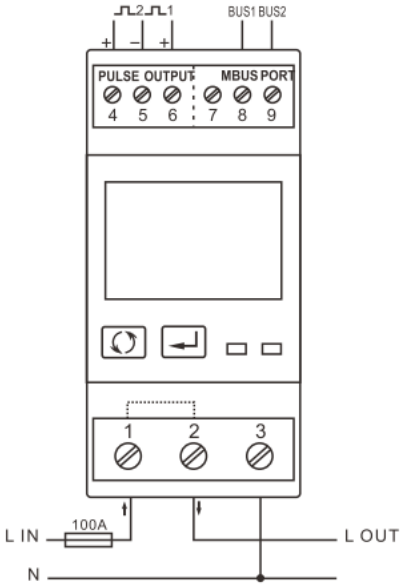
Page	Display	Descriptions
		The setting is done correctly
		The entering information is wrong. The operation fails.
1		**Password** To get into Set-up mode, it asks a password confirmation. Default password: 1000
2		**Address ID** Default ID is 001 Range: 001~250
2-1		Press the "Enter" button, the first digit flash. Press the "Scroll" button to change the value. After choose the new address value, the user need pressing the "Enter" button to confirm the setting.
3-1		High bit of MBUS Secondary address

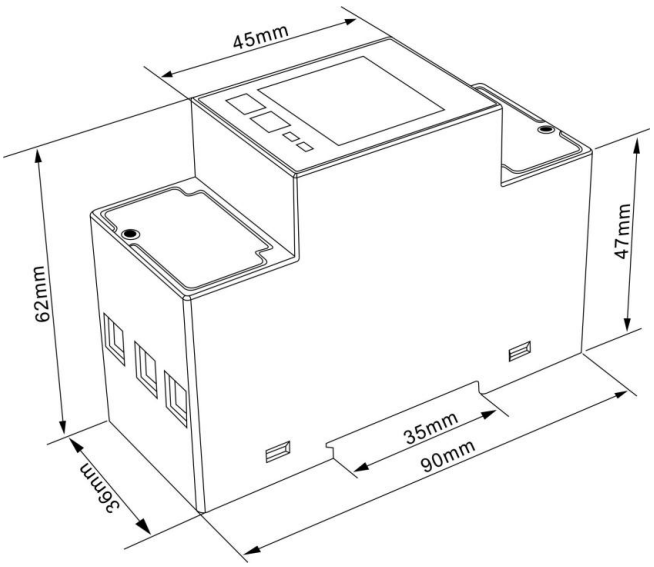
3-2		Low bit of MBUS Secondary address
4		**Baud rate** Default value: 2400bps Range:300, 600,1200, 2400, 4800, 9600bps.
4-1		Press the “Enter” button, the red digit flash. Press the “Scroll” button to change the value. After choose the new baud rate, the user need pressing the “Enter” button to confirm the setting.
5		**Parity** Default: None Option： None, Even, Odd
5-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new Parity, the user need pressing the “Enter” button to confirm the setting.
6		**Pulse Output** Default: Exp. kWh Option： kWh / kVArh / Imp. Kwh / Exp.kWh / Imp.kVArh / Exp. kVArh
6-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new Pulse output option, the user need pressing the “Enter” button to confirm the setting.

7		**Pulse Constant** Default: 1000 Option: 1000 / 100 / 10 / 1
7-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new Pulse constant option, the user need pressing the “Enter” button to confirm the setting.
8		**Pulse duration** Default: 100mS Option: 200 / 100 / 60ms
8-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new Pulse duration option, the user need pressing the “Enter” button to confirm the setting.
9		**Demand Integration Time** Default: 15 minutes Option: 5 / 10 / 15 / 30 / 60 / OFF
9-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new DIT option, the user need pressing the “Enter” button to confirm the setting.
10		**Automatic Scroll Time Interval** Default: 0 S Option: 0 ~ 30S

10-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the option. After choose the new “Scrl” option, the user need pressing the “Enter” button to confirm the setting.
11		**Reset the demand information**
11-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to confirm the resetting of demand inormation.
12		**Password** Default: 1000
12-1		Press the “Enter” button, the red part flash. Press the “Scroll” button to change the value. After choose the new password, the user need pressing the “Enter” button to confirm the setting.

Wiring and Dimension





Installation